REMARKS

I. PENDING CLAIMS AND SUPPORT FOR AMENDMENTS

Upon entry of this Amendment, claims 1, 2, 9-17, and 19-21 will be pending in this application. Applicant has amended claims 1, 20, and 21 to incorporate the limitations of claim 4. No new matter has been added.

II. EXAMINER INTERVIEW

Applicant acknowledges, with appreciation, the courtesies extended to Applicant's representative during the telephonic interview of January 9, 2007. During the interview, the above amendments to the claims were discussed, as well as the substance of the arguments presented herein, and the existence of the data included in the attached Declaration under 37 C.F.R. § 1.132.

III. NOTIFICATION OF COPENDING APPLICATION

The Examiner's attention is respectfully directed to copending U.S. Serial No. 11/372,789, which is a continuation-in-part of the present application.

IV. OBVIOUSNESS REJECTIONS

A. Hiller in view of Yanou et al.

At pages 2-3 of the Office action, the Examiner has rejected claims 1-3, 5, 7, and 9-21 under 35 U.S.C. § 103(a) as obvious over Hiller (U.S. Patent No. 3,950,251) in view of Yanou et al. (U.S. Patent Application No. 2004/0060873). Applicant respectfully traverses this rejection and requests its reconsideration and withdrawal.

Applicant's amendment to the claims renders this rejection moot.

B. Hiller in view of Thomsen et al.

At pages 3-4 of the Office action, the Examiner has rejected claims 1-3, 5, 9-17, and 19-21 under 35 U.S.C. § 103(a) as obvious over Hiller in view of Thomsen et al. (U.S. Patent No. 4,654,142).

Applicant respectfully traverses this rejection and requests its reconsideration and withdrawal.

Applicant's amendment to the claims renders this rejection moot.

C. Hiller in view of Yanou et al. or Thomsen et al., further in view of Carrubba et al.

At page 4 of the Office action, the Examiner has rejected claim 4 under 35 U.S.C. § 103(a) as obvious over Hiller in view of Yanou et al. or Thomsen et al., and further in view of Carrubba et al. (U.S. Patent No. 5,338,458). Applicant respectfully traverses this rejection and requests its reconsideration and withdrawal, to the extent that it applies to claim 1, which has been amended to incorporate claim 4.

As Applicant has previously explained, Hiller teaches that the activated charcoal granules used in the disclosed filter should be 14 x 40 mesh granules. This corresponds to particles that will pass through a 1435 μm sieve (i.e., a 1.435 mm sieve), but will not pass through a 420 μm sieve. In other words, the particle sizes range between about 1.4 mm and about 0.42 mm. These particles are considerably larger than those recited in Applicant's claims, which range from 50 mesh (297 μm) to 375 mesh (39.3 μm). The Examiner appears to recognize this defect in Hiller. In an attempt to cure it, the Examiner appears to take the position that it would have been obvious to one of ordinary skill in the art to replace the granules of Hiller with powdered material disclosed in Yanou et al. or Thomsen et al. Then,

the Examiner's reasoning appears to be, one of ordinary skill in the art would have been motivated to replace the material of Yanou et al. or Thomsen et al. with the material disclosed in Carrubba et al., but keeping the particle sizes of the materials of Yanou et al. or Thomsen et al. The Examiner provides little in the way of motivation for making these changes, except for the unsupported conclusion that the big particles of Hiller and the small particles of Yanou et al. and Thomsen et al. are "equivalent," and the assertion that the adsorbent material of Carrubba et al. can remove chloramine.

The Examiner's reasoning fails to account for the fact that there are serious problems associated with making the changes required by his rejection, as well as problems with the sufficiency of the reference disclosures relied upon, that would cause one of ordinary skill in this art to avoid the combination of reference teachings required by the rejection..

First, Thomsen et al. is completely silent with respect to the particle size. Combining it with Hiller and Carrubba et al. does not give the claimed invention, because there is no teaching of the particle sizes recited in Applicant's claims.

Second, Hiller and Yanou et al. are directed to completely different filtration technologies that require different media, and the design of the Hiller and Yanou et al. devices precludes interchanging their media. Yanou et al. discloses a two part filtration cartridge for use in a pitcher-type filter for drinking water. Because the water and the filtration media are often used in a way that can promote the growth of microorganisms, Yanou et al. designed a two-part filtration cartridge. The upper part of the cartridge, which is exposed to the raw, unfiltered water, contains an adsorbent, which can be activated carbon in relatively small particle sizes. The lower part of the cartridge, which is in contact with the

filtered water, contains a hollow fiber filter, capable of removing particles as small as 0.1 μm, such as bacteria or microbes. *See* Yanou et al., paragraph [0017]. The reasons that Yanou et al. is able to use the adsorbent particle size range described in paragraph [0016] are (1) the particles cannot enter the filtered water because they are excluded by the hollow fiber filter, and (2) the Yanou et al. device does not impose a significant pressure on filtration media – Yanou et al. repeatedly state that the water flows through the filter under the pressure head of its own weight. See, in particular, paragraph [0060], where Yanou et al. state:

> In this way, unlike the water purifier which is used with the water line capable of applying 0.1 MPa or more of pressure, in the pitcher type water purifier which performs filtration with the use of the water's own weight resulting from the head level of 5-30 cm or so, i.e. with the use of a very low pressure of 0.0005-0.003 MPa or so, the filter performance is greatly affected by the filling density of the membrane. Therefore the filling density of the membrane must be strictly set.

The particles on the lower end of the size range disclosed in Yanou et al. function in the Yanou et al. gravity filter device because the hollow fiber filter will not allow them to pass into the filtered water, thereby reducing turbidity in the filtered water.

By contrast, Hiller discloses much larger granules of adsorbent media (ranging from about 420 μm to about 1435 μm. The cylindrical shells disclosed in Hiller have pores in either the 30-50 μm or 60-80 μm range. The smaller particles of Yanou et al. would be completely unsuitable for use in the pressurized device of Hiller, because the particles will abrade against each other under pressure and will decrease in particle size very rapidly, becoming small enough to clog the carbon block filter or even to pass through both the carbon block and pores in the shells, resulting in increased turbidity in the water. Hiller

discloses the use of large granules because there will be a smaller percentage of fines therein, and because the large granules will take longer to abrade in size to a point where they cause an increase in turbidity (Hiller discloses at column 4, lines 49-50 that the expected lifetime of the filter element is about six months).

A worker having ordinary skill in this art would expect that placing loose carbon particles into a pressurized water stream will result in the carbon particles contacting each other and that this contact will result in abrasion of the particles into smaller particles. As Applicant has previously explained (and as the Examiner has apparently accepted), the interaction of a flowing fluid (e.g., water) with unbound particles is completely different from the interaction between a fluid and a carbon block. In a carbon block, such as that disclosed as element 34 in Hiller, the carbon particles are immobilized by the binder resin. It is therefore extremely difficult for the particles to be taken up by the flowing liquid and carried to other parts of the filtration system, where they can clog the system, or if small enough, exit the system with the flowing water (carrying along with them whatever contaminants or pathogens that have adhered to them). Thus, one of ordinary skill in this art might be willing to use small particles in a carbon block to increase surface area, and because there is little chance of the particles breaking free of the block and being carried through the filtration system.

Thus, this worker would expect that introducing particles having sizes in the lower size range disclosed in Yanou et al. into the device of Hiller will result in a filter with a very short effective life (much shorter than that obtained using the particle sizes disclosed by Hiller for use in his device) because the smaller particles will rapidly abrade under

pressurized water flow to form smaller particles that will penetrate the inner shell and increase turbidity in the filtered water. A worker having ordinary skill in this art would not have been motivated to introduce particles having the smaller particle sizes disclosed in Yanou et al. into the device disclosed by Hiller. Instead, one of ordinary skill in the art would have been motivated by a desire to maintain a commercially acceptable product life for the filtration cartridge by using the larger particles disclosed by Hiller for use in his device, rather than modify the Hiller disclosure as the Examiner has suggested. Such a modification would lead to a product life of considerably less than the six months described by Hiller; perhaps as short as a few hours or days before turbidity begins to become a problem and the filtration provided becomes unacceptable to consumers.

In addition, the worker of ordinary skill in the art would know that the use of smaller particles in an unbound filter element can lead to significant channeling, as fluid flow displaces the smaller particles laterally, opening up a less obstructed flow path through the filter element. Because fluid flowing through the channel is in contact with less of the media material, it is not as effectively treated for contaminants. The effectiveness of the filter at removing contaminants can therefore be decreased. The larger particles disclosed by Hiller are more difficult to push aside, and therefore less likely to lead to channeling than would the smaller particles disclosed by Yanou et al. for use in a gravity filter (where such channeling is less of a problem occur because the flow rate and fluid pressure are orders of magnitude smaller than in a filter of the type disclosed in Hiller). For this reason as well, one of ordinary skill in this art would not have been motivated to substitute the small carbon block particles of Yanou et al. for the large unbound filtration media particles of Hiller.

Instead, one of ordinary skill in the art, reading the disclosures of Hiller and Yanou et al. together, would have been motivated to use the large granule-sized particles disclosed in Hiller, not the smaller carbon block particles of Yanou et al., in the second filter element 35 of Hiller in the reasonable expectation that these larger particles are less likely to be carried off by the flow of water through the system, less likely to clog the carbon block 34, will take longer time to abrade into smaller particles, and are less likely to exhibit poor performance due to channeling.

Applicant does not dispute that the catalytic chars disclosed in Carrubba et al. can decompose chloramine. However, Carrubba et al. does not cure the deficiencies of Hiller and Yanou et al. described above in that Carrubba et al. does not provide a teaching or suggestion that particulate filtration media having the size range recited in claim 1 should be combined with a carbon block. As with Yanou et al., the particles disclosed in Carrubba et al. are much smaller than those used by Hiller, and one of ordinary skill in this art would not have been motivated to substitute the smaller Carrubba et al. particles for the larger Hiller particles in anticipation of the problems described above. Moreover, the method disclosed in Carrubba et al. for removing chloramine from water involves grinding the char, adding stock monochloramine solution to an Erlenmeyer flask, adding the ground char, and agitating the mixture for 75 minutes, and vacuum filtering to remove the char. In effect, Carrubba et al. disclose only a batch method, requiring a contact time of 75 minutes.

Neither Carrubba et al., nor Hiller, Yanou et al., or Thomsen contain any disclosure stating, or even suggesting, that the char of Carrubba et al. could be incorporated into a cartridge for use in a pressurized, continuous filtration system of the type disclosed in Hiller,

with any reasonable expectation of success. Hiller uses much larger particles that are not catalytic char, and makes no claims that his system can remove chloramine. Yanou et al. is not even directed to the same type of continuous, pressurized system as would be used with the cartridge of Hiller. Yanou et al. is also silent with respect to removal of chloramine. Thomsen does not even disclose the size of the particles used therein, and also does not disclose chloramine removal.

Nothing in any of the cited references teaches or suggests that the catalytic char particles of Carrubba et al. would function in the device of Hiller and provide a sufficient residence time (Carrubba et al. indicate that this would be around 75 minutes) to effectively remove chloramine from water in a continuous, pressurized treatment system. Hiller indicates (column 4, lines 32-35) that the filter is to be used with water flowing from a household supply line. This will typically provide a flow rate sufficiently fast that a 75 minute residence time, given the size of the Hiller device, is impossible.

For at least the reasons given above, Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness, and as a result, the rejection should be withdrawn.

D. Declaration of Ehud Levy

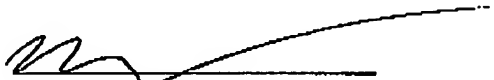
Even if the Examiner had established a *prima facie* case of obviousness, it is rebutted by the evidence of unexpectedly different results presented in the attached Declaration of Ehud Levy ("the Levy Declaration") submitted under 37 C.F.R. § 1.132. The Declaration establishes that the use of catalytic char unexpectedly provides decreased turbidity when compared to activated carbon. When catalytic char is used in the filtration device according

to the invention, a small amount of turbidity is initially observed, but as the filter is used, the turbidity rapidly drops to a negligible amount, where it remains for a large number of duty cycles. By contrast, when activated carbon is used, significantly higher turbidity is observed, and the turbidity level remains at this higher level over a large number of duty cycles. The testing was carried out under side-by-side conditions using filtration cartridges of the same design and meeting the same specifications, and using the same test rig. The difference in result is unexpected, given the Examiner's reasoning that it would have been obvious to substitute catalytic char for activated carbon because, other than providing for chloramine removal, they are equivalent.

Applicant respectfully submits that this application is in condition for immediate allowance, and an early notification to that effect is earnestly solicited. If the Examiner believes that a personal or telephonic interview will be useful in advancing prosecution, he is respectfully requested to contact the undersigned before issuance of a final office action, in order to arrange such an interview.

The Commissioner is hereby authorized to charge any deficiencies or credit any overpayment to Deposit Order Account No. 11-0855.

Respectfully submitted,



Bruce D. Gray
Reg. No. 35, 799

KILPATRICK STOCKTON LLP
Suite 2800, 1100 Peachtree Street
Atlanta, Georgia 30309-4530
(404) 815-6218